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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,778	02/19/2002	Donald Henry Willis	PU020026	5111

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EXAMINER

ANYASO, UCHENDU O

ART UNIT PAPER NUMBER

2675

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/078,778

Applicant(s)

WILLIS, DONALD HENRY

Examiner

Uchendu O Anyaso

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. **Claims 1-12** are pending in this action.

Claim Rejections - 35 USC ' 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (U.S. 5,247,169) in view of *Carlson* (U.S. 4,523,230), and further in view of Deering et al. (U.S. Patent Publication 2003/0142099).

Regarding independent **claims 1** and **9**, and for **claims 10-12**, Okada teaches a means for dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal (column 2, lines 17-33).

Furthermore, Okada teaches a split low pass filter (10, 11) arrangement and a delay matching circuit (15, 16, 18) wherein the low-pass filters (10, 11) are for independently low pass filtering rising transients and falling transients in said low brightness signal to reduce adjacent pixel interdependence, and the delay matching circuit for the high brightness signal (figures 1, 2 at 10, 11, 15, 16, 18, column 7, lines 5-16, figure 3 at S7; column 3, lines 4-13;).

Furthermore, Okada teaches how signals are combined for determining a positional relation between the high- and low-brightness parts by teaching an operation unit 14, comparator 21, first AND circuit 19, second AND circuit 20, third AND circuit 22, first flip-

Art Unit: 2675

flop circuit 23, OR circuit 24, second flip-flop circuit 25, exclusive OR circuit 26, and fourth AND circuit 27 form positional relation determination means (column 5, lines 45-52, figure 1b; column 6, lines 5-13).

However, Okada does not teach a means for combining the delayed high brightness signal with the filtered low brightness signal to provide an output that reduces sparkle artifacts. On the other hand, Carlson teaches this concept by teaching how low-pass filters are coupled in a cascade through a summer wherein the first of the filters is associated with a lower subspectra and the second filter is associated with a higher subspectra (column 18, lines 29-49, figure 2a; see also column 8, lines 24-62, figure 2a) such that sparkle is suppressed (column 13, lines 46-50).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Okada and Carlson because while Okada teaches the concept of dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal (column 2, lines 17-33), Carlson teaches the method of combining two signals that have been produced via low-pass filters with the use of a summer in order to facilitate sparkle suppression (column 13, lines 46-50; column 18, lines 29-49, figure 2a; see also column 8, lines 24-62, figure 2a). The motivation for combining these inventions would have been to achieve noise reduction without the introduction of noticeable artifacts in a display image (see Abstract).

However, Okada and Carlson do not teach how their circuits would reduce pixel interdependence in a liquid crystal display. On the other hand, Deering teaches an invention relating to the field of computer graphics in a display device that may be of the liquid-crystal-on-silicon type (page 1, para. 0002; page 4, para. 0056) wherein tri-linear filtering may be used

Art Unit: 2675

to smooth out edges involving two neighboring mip maps, and this prevents moving objects from displaying a distracting 'sparkle' resulting from mismatched texture intersections (page 16, para. 0205).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Okada, Carlson, and Deering because while the combination of Okada and Carlson teaches the concept of dividing an input signal into a plurality of signals having at least a high brightness signal and a low brightness signal and then combining the two signals, which have been low-pass filtered, with the use of a summer in order to facilitate sparkle suppression, Deering teaches how to reduce pixel interdependence in a liquid crystal display by the processing of smoothing out edges involving two neighboring mip maps. The motivation for combining these inventions would have been to improve the realism of images displayed on a computer system (page 16, para. 206; page 15, para. 0198).

Regarding **claims 2-4**, in further discussion of claim 1, Okada teaches at least two low pass filters (10, 11), at least one associated delay circuit (15, 16, 18), and a maximum selector circuit as taught by comparator (21) (figures 1A & 1B).

Regarding **claim 5**, in further discussion of claim 1, Deering teaches an invention relating to the field of computer graphics in a display device that may be of the liquid-crystal-on-silicon type (page 1, para. 0002; page 4, para. 0056).

Art Unit: 2675

Regarding **claims 6-8**, in further discussion of claim 3, Carlson teaches how a low pass filter circuit comprises an asymmetric 5-tap filter with coefficients $(8/16)$, $(4/16)$, $(2/16)$, $(1/16)$, and $(1/16)$ preceded by a delay of 4 sample periods (see figures 4 & 4a).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,211,859 to *Lin et al* for a method for reducing pulsing on liquid crystal displays.

U.S. Patent 5,019,904 to Campbell for a scan converter with adaptive vertical filter for single bit computer graphics systems.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)


Application/Control Number: 10/078,778

Page 6

Art Unit: 2675

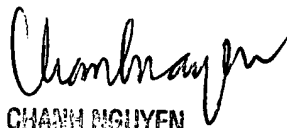
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Uchendu O. Anyaso

03/20/2004



CHANH NGUYEN
PRIMARY EXAMINER